Professor Oscar Au 区子廉
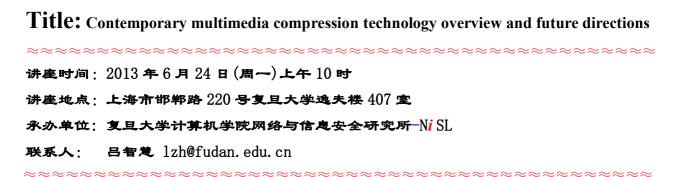
Dept. of Electronic and Computer Engineering

Hong Kong University of Science and Technology (HKUST)

Title: Contemporary multimedia compression technology overview and future directions

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讲座时间：2013 年 6 月 24 日（周一）上午 10 时

讲座地点：上海市邯郸路 220 号复旦大学逸夫楼 407 室

承办单位：复旦大学计算机学院网络与信息安全研究所-N*i* SL

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Abstract:

As raw digital multimedia data are huge, it is extremely important to compress them to save bandwidth for multimedia communication and memory for multimedia storage. Over the years, there have been many generations of video coding standards from ISO and ITU-T, including MPEG-1, MPEG-2, MPEG-4, H.261, H.263, H.264, etc. In this talk we will highlight the historical development of such compression technologies, the major technology components, and major past and future trends. We will touch upon 3D TV which are becoming very popular nowadays. We will briefly explain the standardization game and how these technologies become huge commercial consumer electronics success such as VCD, DVD, digital cable TV, satellite TV, internet TV, skype, QQ, smart phone, digital camera, camcorders, Facebook, Renren, Youtube, etc. If time permits, we will also touch upon image, audio, speech compression technologies. **This seminar is supported by KC Wong Foundation and is also an APSIPA Distinguished Lecture.**

Speaker Biography:

Professor Oscar C. Au received his B.A.Sc. from Univ. of Toronto in 1986, his M.A. and Ph.D. from Princeton Univ. in 1988 and 1991 respectively. After being a postdoctoral researcher in Princeton Univ. for one year, he joined the Hong Kong University of Science and Technology (HKUST) as an Assistant Professor in 1992. He is/was a Professor of the Dept. of Electronic and Computer Engineering, Director of Multimedia Technology Research Center (MTrec), and Director of the Computer Engineering (CPEG) Program in HKUST.

His main research contributions are on video and image coding and processing, watermarking and light weight encryption, speech and audio processing. Research topics include fast motion estimation for MPEG-1/2/4, H.261/3/4 and AVS, optimal and fast sub-optimal rate control, mode decision, transcoding, denoising, deinterlacing, post-processing, multi-view coding, view interpolation, depth estimation, 3DTV, scalable video coding, distributed video coding, subpixel rendering, JPEG/JPEG2000, HDR imaging, compressive sensing, halftone image data hiding, GPU-processing, software-hardware co-design, etc. He has published 58 technical journal papers, 330+ conference papers, and 70+ contributions to international standards. His fast motion estimation algorithms were accepted into the ISO/IEC 14496-7 MPEG-4 international video coding standard and the China AVS-M standard. His light-weight encryption and error resilience algorithms are accepted into the China AVS standard. He was Chair of Screen Content Coding AdHoc Group in the JCTVC for the ITU-T H.265 HEVC video coding standard. He has 20 granted US patents and is applying for 70+ more on his signal processing techniques. He has performed forensic investigation and stood as an expert witness in the Hong Kong courts many times.

Dr. Au is **a Fellow of the Institute of Electrical and Electronic Engineering (IEEE)** and is a Board 0f Governor member of the Asia Pacific Signal and Information Processing Association (APSIPA). He is/was Associate Editors of IEEE Trans. On Circuits and Systems for Video Technology (TCSVT), IEEE Trans. on Image Processing (TIP), and IEEE Trans. on Circuits and Systems, Part 1 (TCAS1). He is on the Editorial Boards of Journal of Visual Communication and Image Representation (JVCIR), Journal of Signal Processing Systems (JSPS), APSIPA Trans. On Signal and Information Processing (TSIP), Journal of Multimedia (JMM), and Journal of Franklin Institute (JFI). He is/was Chair of IEEE CAS Technical Committee on Multimedia Systems and Applications (MSATC), Chair of SP TC on Multimedia Signal Processing (MMSP), and Chair of APSIPA TC on Image, Video and Multimedia (IVM). He is a member of CAS TC on Video Signal Processing and Communications (VSPC), CAS TC on Digital Signal Processing (DSP), SP TC on Image, Video and Multidimensional Signal Processing (IVMSP), SP TC on Information Forensics and Security (IFS), and ComSoc TC on Multimedia Communications (MMTC). He served on the Steering Committee of IEEE Trans. On Multimedia (TMM), and IEEE Int. Conf. of Multimedia and Expo (ICME). He also served on the organizing committee of IEEE Int. Symposium on Circuits and Systems (ISCAS) in 1997, IEEE Int. Conf. On Acoustics, Speech and Signal Processing (ICASSP) in 2003, the ISO/IEC MPEG 71st Meeting in 2005, Int. Conf. on Image Processing (ICIP) in 2010, and other conferences. He was General Chair of Pacific-Rim Conference on Multimedia (PCM) in 2007, IEEE Int. Conf. on Multimedia and Expo (ICME) in 2010 and the International Packet Video Workshop (PV) in 2010. He won best paper awards in SiPS 2007, PCM 2007 and MMSP 2012. He is an IEEE Distinguished Lecturer (DLP) in 2009 and 2010, and has been keynote speaker for multiple times.